

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-24. (Canceled).

25. (Currently Amended) A method of immunizing an animal comprising ~~providing~~ administering to the animal ~~at least one~~ a *Chlamydia psittaci* antigen having a sequence of SEQ ID NO:7 in an amount effective to induce an immune response against *Chlamydia psittaci*.

26. (Withdrawn) The method of claim 25, wherein the provision of the at least one *Chlamydia psittaci* antigen comprises:

- (a) preparing a cloned expression library from fragmented genomic DNA, cDNA or sequenced genes of *Chlamydia psittaci*;
- (b) administering at least one clone of the library in a pharmaceutically acceptable carrier into the animal, wherein the at least one clone encodes the at least one *Chlamydia psittaci* antigen; and
- (c) expressing the at least one *Chlamydia psittaci* antigen, in the animal.

27. (Withdrawn) The method of claim 76, wherein, in addition to the at least one clone, the expression library comprises at least one or more additional clone having a sequence of SEQ ID NO:6, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID

NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, or SEQ ID NO:60, or fragment thereof.

28. (Canceled)

29. (Withdrawn) The method of claim 26, wherein the at least one clone is administered by a intramuscular injection or epidermal injection.

30. (Withdrawn) The method of claim 29, wherein the intramuscular injection is at least 1.0  $\mu$ g to 200  $\mu$ g of nucleic acid from the cloned expression library.

31. (Withdrawn) The method of claim 29, wherein a second intramuscular injection or epidermal injection is administered at least about three weeks after the first injection.

32. (Withdrawn) The method of claim 25, wherein the provision of the *Chlamydia psittaci* antigen(s) comprises:

- (a) obtaining at least one polynucleotide having a sequence encoding a *Chlamydia psittaci* antigen;
- (b) administering the polynucleotide to the animal; and
- (c) expressing the one or more *Chlamydia psittaci* antigen in the animal.

33. (Withdrawn) The method of claim 78, wherein the at least one *Chlamydia psittaci* antigen has a sequence of SEQ ID NO:7 or an antigenic fragment thereof.

34. (Withdrawn) The method of claim 78, further comprising administering to the animal at least a second polynucleotide encoding a second *Chlamydia psittaci* antigen.

35. (Withdrawn) The method of claim 34, wherein the second polynucleotide is further defined as encoding a second *Chlamydia psittaci* antigen having a sequence of SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:61, or an antigenic fragment thereof.

36. (Withdrawn) The method of claim 32, wherein the polynucleotide is administered by a first intramuscular injection or epidermal injection.

37. (Withdrawn) The method of claim 36, wherein the polynucleotide is administered by a second intramuscular injection or epidermal injection.

38. (Withdrawn) The method of claim 37, wherein the intramuscular injection is at least 1.0 µg to 200 µg of the polynucleotide.

39. (Currently Amended) The method of claim 25, ~~wherein the provision of the *Chlamydia psittaci* antigen(s) comprises:~~

- ~~(a) — further comprising preparing a pharmaceutical composition of at least one the *Chlamydia psittaci* antigen or an antigenic fragment thereof; and~~
- ~~(b) — administering the at least one antigen or fragment into the animal.~~

40. (Canceled)

41. (Currently Amended) The method of claim ~~[[82]]~~25 further comprising administering to the animal at least a second *Chlamydia psittaci* antigen.

42. (Currently Amended) The method of claim 41, wherein the second *Chlamydia psittaci* antigen has a sequence of ~~SEQ ID NO:13~~ SEQ ID NO:11, ~~or an antigenic fragment thereof comprising at least 15 contiguous amino acid residues of~~ SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, or SEQ ID NO:61.

43. (Original) The method of claim 25, wherein the animal is a mammal.

44. (Previously Presented) The method of claim 43, wherein the mammal is a bovine.

45. (Previously Presented) The method of claim 43, wherein the mammal is a human.

46-49. (Canceled)

50. (Withdrawn) The method of claim 25, further comprising administering to the animal an antigen ~~or an antigenic fragment~~ from a *Chlamydia* species other than *Chlamydia psittaci*.

51. (Withdrawn) The method of claim 25, further comprising administering to the animal an antigen from a non-*Chlamydia* species.

52. (Withdrawn) A method of obtaining polynucleotide sequences effective for generating an immune response against the genus *Chlamydia* in an animal comprising:

- (a) preparing a cloned expression library from fragmented genomic DNA of the genus *Chlamydia*;
- (b) administering one or more clones of the library in a pharmaceutically acceptable carrier into the animal in an amount effective to induce an immune response; and
- (c) selecting from the library the polynucleotide sequences that induce an immune response,

wherein the immune response in the animal is protective against *Chlamydia* infection.

53. (Withdrawn) The method of claim 52, further comprising testing the animal for immune resistance against a *Chlamydia* bacterial infection by challenging the animal with *Chlamydia*.

54. (Withdrawn) The method of claim 52, wherein the genomic DNA is fragmented physically or by restriction enzymes.

55. (Withdrawn) The method of claim 54, wherein the fragments are, on average, about 200-1000 base pairs in length.

56. (Withdrawn) The method of claim 52, wherein each clone in the library comprises a gene encoding a mouse ubiquitin fusion polypeptide designed to link the expression library polynucleotides to the ubiquitin gene.

57. (Withdrawn) The method of claim 52, wherein the library is about  $1 \times 10^3$  to about  $1 \times 10^6$  clones.

58. (Withdrawn) The method of claim 57, wherein the library is  $1 \times 10^5$  clones.

59. (Withdrawn) The method of claim 52, wherein about 0.01  $\mu$ g to about 200  $\mu$ g of DNA, cDNA or sequenced gene from the clones is administered into the animal.

60. (Withdrawn) The method of claim 59, wherein the genomic DNA, cDNA or sequenced gene is introduced by intramuscular injection or epidermal injection.

61. (Withdrawn) The method of claim 52, wherein the fragmented genomic DNA, cDNA or sequenced genes of *Chlamydia* further comprises a promoter operably linked to the DNA that permits expression in a vertebrate animal cell.

62.-73. (Canceled)

74. (Currently Amended) The method of claim 25, ~~further defined as comprising providing to the animal at least one~~ wherein the *Chlamydia psittaci* antigen is further defined as having a sequence of SEQ ID NO:9 or an antigenic fragment thereof comprising at least 25 contiguous amino acid residues of SEQ ID NO:9.

75. (Canceled)

76. (Withdrawn) The method of claim 26, wherein the at least one clone, has a sequence of SEQ ID NO:8 or fragment thereof.

77. (Withdrawn) The method of claim 76, wherein the at least one clone comprising a nucleic acid sequence of SEQ ID NO:8 or a fragment thereof is further defined as comprising a nucleic acid sequence of SEQ ID NO:6 or a fragment thereof.

78. (Withdrawn) The method of claim 32, wherein the provision of the *Chlamydia psittaci* antigen(s) is further defined as further comprising:

- (a) obtaining at least one polynucleotide having a sequence encoding an antigen having a sequence of SEQ ID NO:9 or an antigenic fragment thereof comprising at least 25 contiguous amino acid residues of SEQ ID NO:9;
- (b) administering the polynucleotide to the animal; and
- (c) expressing the one or more *Chlamydia psittaci* antigen having a sequence of SEQ ID NO:9 or an antigenic fragment thereof in the animal.

79. (Withdrawn) The method of claim 78, wherein the polynucleotide having a sequence encoding an antigen having a sequence of SEQ ID NO:9 or an antigenic fragment thereof has a sequence of SEQ ID NO:8 or fragment thereof.

80. (Withdrawn) The method of claim 33, wherein the polynucleotide having a sequence encoding an antigen having a sequence of SEQ ID NO:7 or an antigenic fragment thereof is further defined as having a sequence of SEQ ID NO:6 or fragment thereof.

81. (Withdrawn) The method of claim 35, wherein the second polynucleotide has a sequence of SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, SEQ ID NO:60, or fragment thereof.

82. (Canceled)

83. (Currently Amended) The method of claim 42, wherein the second *Chlamydia psittaci* antigen is further defined as having a sequence of SEQ ID NO:13 ~~or an antigenic~~

~~fragment thereof is further defined as having a sequence of SEQ ID NO:11 or an antigenic fragment thereof.~~

84-91. (Canceled)

92. (New) A method of immunizing an animal comprising the steps of:

preparing a *Chlamydia psittaci* antigen; and  
administering the *Chlamydia psittaci* antigen to an animal in an amount effective to induce an immune response against *Chlamydia psittaci*; wherein the *Chlamydia psittaci* antigen comprises the amino acid sequence as set forth as SEQ. ID NO: 9.

93. (New) The method of claim 92, wherein the the *Chlamydia psittaci* antigen comprises the amino acid sequence as set forth as SEQ. ID NO: 7.

94. (New) The method of claim 92, wherein the method further comprises the steps of:

preparing a second *Chlamydia psittaci* antigen; and  
administering the second *Chlamydia psittaci* antigen to an animal in an amount effective to induce an immune response against *Chlamydia psittaci*; wherein the second *Chlamydia psittaci* antigen comprises the amino acid sequence as set forth as SEQ. ID NO: 7, 11, 13, 17, 23, or 27.

95. (New) The method of claim 93, wherein the method further comprises the steps of:

preparing a second *Chlamydia psittaci* antigen; and  
administering the second *Chlamydia psittaci* antigen to an animal in an amount effective to induce an immune response against *Chlamydia psittaci*; wherein the second *Chlamydia psittaci* antigen comprises the amino acid sequence as set forth as SEQ. ID NO: 11, 13, 17, 23, or 27.



96. (New) The method of claim 92 wherein the *Chlamydia psittaci* antigen comprises variants of the amino acid sequence as set forth as SEQ. ID NO: 9 that are at least 80% identical to the amino acid sequence as set forth as SEQ. ID NO: 9 and that induce an immune response in an animal to *Chlamydia psittaci*.
97. (New) The method of claim 93 wherein the *Chlamydia psittaci* antigen comprises variants of the amino acid sequence as set forth as SEQ. ID NO: 7 that are at least 80% identical to the amino acid sequence as set forth as SEQ. ID NO: 7 and that induce an immune response in an animal to *Chlamydia psittaci*.
98. (New) The method of claim 94 wherein the *Chlamydia psittaci* antigen comprises variants of the amino acid sequence as set forth as SEQ. ID NO: 7, 11, 13, 17, 23, or 27 that are at least 80% identical to the amino acid sequence as set forth as SEQ. ID NO: 7, 11, 13, 17, 23, or 27 and that induce an immune response in an animal to *Chlamydia psittaci*.
99. (New) The method of claim 95 wherein the *Chlamydia psittaci* antigen comprises variants of the amino acid sequence as set forth as SEQ. ID NO: 11, 13, 17, 23, or 27 that are at least 80% identical to the amino acid sequence as set forth as SEQ. ID NO: 11, 13, 17, 23, or 27 and that induce an immune response in an animal to *Chlamydia psittaci*.
100. (New) The method of claim 92 wherein the *Chlamydia psittaci* antigen comprises a fragment of the amino acid sequence as set forth as SEQ. ID NO: 9 that induces an immune response in an animal to *Chlamydia psittaci*.

101. (New) The method of claim 93 wherein the *Chlamydia psittaci* antigen comprises a fragment of the amino acid sequence as set forth as SEQ. ID NO: 7 that induces an immune response in an animal to *Chlamydia psittaci*.
102. (New) The method of claim 94 wherein the *Chlamydia psittaci* antigen comprises a fragment of the amino acid sequence as set forth as SEQ. ID NO: 7, 11, 13, 17, 23, or 27 that induces an immune response in an animal to *Chlamydia psittaci*.
103. (New) The method of claim 95 wherein the *Chlamydia psittaci* antigen comprises a fragment of the amino acid sequence as set forth as SEQ. ID NO: 11, 13, 17, 23, or 27 that induces an immune response in an animal to *Chlamydia psittaci*.
104. (New) The method of claim 92 wherein the step of preparing a *Chlamydia psittaci* antigen further comprises preparing the *Chlamydia psittaci* antigen in a pharmaceutically acceptable carrier.
105. (New) The method of claim 94 wherein the steps of preparing a *Chlamydia psittaci* antigen and preparing a second *Chlamydia psittaci* antigen further comprises preparing the *Chlamydia psittaci* antigen and the second *Chlamydia psittaci* antigen in a pharmaceutically acceptable carrier.
106. (New) The method of claim 95 wherein the steps of preparing a *Chlamydia psittaci* antigen and preparing second *Chlamydia psittaci* antigen further comprises preparing the *Chlamydia psittaci* antigen and the second *Chlamydia psittaci* antigen in a pharmaceutically acceptable carrier.
107. (New) The method of claim 92 wherein the animal is a bovine.

108. (New) The method of claim 94 wherein the animal is a bovine.

109. (New) The method of claim 95 wherein the animal is a bovine.

110. (New) The method of claim 92 wherein the animal is a human.

111. (New) The method of claim 94 wherein the animal is a human.

112. (New) The method of claim 95 wherein the animal is a human.

113. (New) The method of claim 92 wherein the animal is a mammal.

114. (New) The method of claim 94 wherein the animal is a mammal.

115. (New) The method of claim 95 wherein the animal is a mammal.